Journal of Pain & Relief
ISSN: 2167-0846

Morningstar et al., J Pain Relief 2015, 4:4
DOI: 10.4172/2167-0846.1000192

Research Article Open Access

Controlled-Release Curcumin for the Treatment of Pain Related to Adult Degenerative Scoliosis: A Retrospective, Open-Label, Case-Controlled Series

Morningstar MW*, Megan Strauchman and Gretchen Fleischmann

Department of Chiropractic, Natural Wellness & Pain Relief Center, USA

Abstract

Background: Patients with adult degenerative scoliosis often experience chronic recurrent back and/or hip pain. This is a very common reason that this patient population seeks treatment. Few treatments are typically offered to adult patients with scoliosis. Of these, the more common are pharmacologic pain management, and epidural injections in more severe cases. The goal of this study was to compare two groups of patients who participated in a scoliosis-specific rehabilitation program. One group additionally took a proprietary curcumin supplement concurrent with therapy. We compared the results of the two groups.

Methods: The results of four consecutive patients with the same diagnosis who took a controlled-release curcumin following a trial of exercise-based scoliosis treatment were collected retrospectively. Outcome assessments included the Cobb angle of the primary curvature, quadruple numerical pain rating scale, and goniometric ranges of motion. Their results were compared against four patients who decided not to take the curcumin formula during their exercise based treatment.

Results: Patients taking the curcumin supplement reported larger average improvements in quadruple numerical pain rating scale taken at baseline and 6 months. Comparative Cobb angles showed similar clinical improvements in the treatment and control groups at 6 months.

Conclusion: Patients taking curcumin daily for 6 months after completing an exercise-based treatment reported statistically significant pain scale improvements compared to baseline and controls. Multiple metabolic and neurologic pathways may account for the observed improvement.

Keywords: Curcumin; Pain; Rehabilitation; Scoliosis

Introduction

It is estimated that the incidence of scoliosis in adult patients ranges from 32% to as high as 68% in postmenopausal females age 60 and up [1]. Adult patients with scoliosis often score worse on health related quality of life questionnaires compared to non-scoliotics [2]. Although Weinstein et al showed no statistical difference in quality of life among adult scoliotic and non-scoliotic patients, they did show a significant difference in chronic pain levels between the two groups [3]. Adult scoliosis patients are far more likely to seek therapeutic intervention for scoliosis due to pain when compared to adolescents [4]. Therefore, finding new ways to improve pain levels in this particular population, given the prevalence of scoliosis in postmenopausal females, is essential.

Curcumin is a natural therapeutic agent that has been tested for a variety of pain disorders, including diabetic neuropathy [5], burn pain [6], osteoarthritis [7-9], delayed onset muscle soreness [10], surgical incision pain [11], and post-operative pain [12]. It is thought that curcumin contains anti-nociceptive and anti-inflammatory properties [13,14]. Therefore, in cases of adult scoliosis, where the condition is chronic, there is often an inflammation-driven pain response as well as from asymmetrical mechanical loading on the supportive soft tissues [15]. Our present study looks at how the introduction of a controlled-release version of supplemental curcumin in patients with adult scoliosis pain affects their pain levels following a short trial of the medication.

Materials and Methods

We reviewed the charts of patients who participated in a short trial of exercise-based scoliosis treatment. All patients presented with a history of adult scoliosis, and pain that was clinically determined to be associated with the scoliosis based upon physical exam findings. Inclusion criteria were as follows: 1) patient must have been 25 years old or older at the initiation of exercise therapy; 2) they did not have a history of neuromuscular, juvenile, or infantile scoliosis; 3) negative history of spinal fusion surgery; and 4) participated in a two-week course of exercise therapy at the same clinic. Patient files were excluded if they did not have a 6-month follow-up documented in the chart.

At the initiation of therapy, patients were given the option of including a controlled-release curcumin supplement (CurcuPlex CR, Xymogen, Inc.) for the purposes of mitigating exercise-based muscle soreness [10] and improving scoliosis-related osteoarthritis pain. Dosage for all subjects was 1 tablet twice daily, 10-12 hours apart. Half of our cohort decided to take the supplement, while half opted against it. All patients subsequently began a two-week exercise based therapy for scoliosis. All patients received the same types of exercises, which were adapted specifically to each patient's level of function as well as their particular curve patterns. Once the two weeks of therapy was completed, each patient was given a specifically prescribed set of home exercises to perform until the next follow-up. Following the conclusion of treatment, patients were instructed to report back to the clinic in 6 months for follow-up. At that time, all patients completed updated numerical pain rating scales, follow-up ranges of motion were recorded, and a follow-up scoliosis radiograph was obtained to evaluate curve correction from the exercises.

***Corresponding author:** Morningstar MW, Department of Chiropractic, Natural Wellness & Pain Relief Center,8293 Office Park Dr, Grand Blanc, MI 48439, U.S.A, Tel: 810-694-3576; Fax: 810-694-9544; E-mail: drmorningstar@nwprc.com

Received June 25, 2015; **Accepted** July 29, 2015; **Published** July 31, 2015

Citation: Morningstar MW, Strauchman M, Fleischmann G (2015) Controlled-Release Curcumin for the Treatment of Pain Related to Adult Degenerative Scoliosis: A Retrospective, Open-Label, Case-Controlled Series. J Pain Relief 4: 192. doi:10.4172/21670846.1000192

Results

The average age of the intervention group was 51 years, and 46 years for the control group. All of the patients in both groups were female patients. At baseline, the intervention group reported average QVAS scores of 60, while the control group reported 57. The average starting Cobb angle for patients taking the curcumin was 43°, and 37° for the control group. Improvements in both groups were observed following exercise therapy. Cobb angle changes were also similar across all curve types between groups. Cobb angles were improved in all groups by an average of 6°, with one patient in the intervention group and two in the control group maintaining their Cobb angle measurements at 6 months. Pain levels improved in all patients and controls. All but one patient saw their QVAS scores drop below 50 on follow up testing. This value is used as a differentiation between mild and moderate to severe pain [16]. The remaining patient who maintained a score above 50 (53) was one of the three whose curves did not change on follow up. The average pain score decrease in the intervention group was 22, while the control group improvement averaged 12.

Discussion

In both the control and intervention groups, the pre and post-treatment Cobb angle changed by about the same amount (6°). However, the intervention group received the additional treatment of oral controlled-released curcumin until follow-up. Therefore, there are two possible explanations for the observed difference in the pain scores, 1) the curcumin was responsible for the observed pain score improvements, or 2) the addition of the curcumin treatment may have created a placebo effect on the pain scores. Follow-up studies with a sham treatment would confirm one of these explanations.

Limitations

Although the study was controlled, it was retrospective in nature, so it cannot exclude selection and examiner bias. However, attempts to minimize these were taken. We selected consecutive patients who fit the inclusion criteria and did not meet the exclusion criteria. Second, the control group was not offered a placebo supplement. Therefore, some of these patients may have reported bigger placebo improvements had they taken a placebo capsule. Finally, the sample size is small, and without a power analysis it is impossible to determine how much of a change was required between the two groups comparatively to make those changes valid.

Conclusion

Two groups of adult patients with idiopathic scoliosis who completed a short course of chiropractic rehabilitation therapy were assessed six months later for Cobb angle and pain levels. One of the groups additionally took a proprietary controlled-release curcumin supplement until follow-up. At six month follow-up, the group taking the curcumin supplement reported greater improvements in pain scores compared to the control group.

References

1. Schwab F, Dubey A, Gamez L, E Fegoun AB, Hwang K, et al. (2005) Adult scoliosis: prevalence, SF-36, and nutritional parameters in an elderly volunteer population. Spine 1: 1082-1085.
2. Pellisé F, Vila-Casademunt A, Ferrer M, Domingo-Sàbat M, Bagó J, et al. (2014) Impact on health related quality of life of adult spinal deformity (ASD) compared with other chronic conditions. Eur Spine J
3. Weinstein SL, Dolan LA, Spratt KF, Peterson KK, Spoonamore MJ, Ponseti IV. (2003) Health and function of patients with untreated idiopathic scoliosis: A 50-year natural history study. JAMA 289: 559-567.
4. Jackson RP, Simmons EH, Stripinis D. (1983) Incidence and severity of back pain in adult idiopathic scoliosis. Spine 8: 749-756.
5. Zhao WC, Zhang B, Liao MJ, Zhang WX, He WY, et al. (2014) Curcumin ameliorated diabetic neuropathy partially by inhibition of NADPH oxidase mediating oxidative stress in the spinal cord. Neurosci Lett 560: 81-85.
6. Cheppudira B, Fowler M, McGhee L, Greer A, Mares A, et al. (2013) Curcumin: a novel therapeutic for burn pain and wound healing. Expert Opin Investig Drugs 22: 1295-303.
7. Henrotin Y, Gharbi M, Dierckxsens Y, Priem F, Marty M, et al. (2014) Decrease of a specific biomarker of collagen degradation in osteoarthritis, Coll2-1, by treatment with highly bioavailable curcumin during an exploratory clinical trial. BMC Complement Altern Med 14: 159.
8. Nakagawa Y, Mukai S, Yamada S, Matsuoka M, Tarumi E, et al. (2014) Short-term effects of highly-bioavailable curcumin for treating knee osteoarthritis: a randomized, double-blind, placebo-controlled prospective study. J Orthop Sci 19: 933-9.
9. Kuptniratsaikul V, Dajpratham P, Taechaarpornkul W, Buntragulpoontawee M, Lukkanapichonchut P, et al. (2014) Efficacy and safety of Curcuma domestica extracts compared with ibuprofen in patients with knee osteoarthritis: a multicenter study. Clin Interv Aging 9: 451-8.
10. Nicol LM, Rowlands DS, Fazakerly R, Kellett J. (2015) Curcumin supplementation likely attenuates delayed onset muscle soreness (DOMS). Eur J Appl Physiol 115: 1769-1777
11. Sahbaie P, Sun Y, Liang DY, Shi XY, Clark JD. (2014) Curcumin treatment attenuates pain and enhances functional recovery after incision. Anesth Analg 118: 1336-1344.
12. Zhu Q, Sun Y, Yun X, Ou Y, Zhang W, et al. (2014) antinociceptive effects of curcumin in a rat model of postoperative pain. Sci Rep 4: 4932.
13. Aggarwal BB, Harikumar KB. (2009) Potential therapeutic effects of curcumin, the anti-inflammatory agent, against neurodegenerative, cardiovascular, pulmonary, metabolic, autoimmune and neoplastic diseases. Int J Biochem Cell Biol 41: 40-59.
14. Klawitter M, Quero L, Klasen J, Gloess AN, Klopprogge B, et al. (2012) Curcuma DMSO extracts and curcumin exhibit an anti-inflammatory and anti-catabolic effect on human intervertebral disc cells, possibly by influencing TLR2 expression and JNK activity. J Inflamm 9: 29.
15. Hawes MC, O'Brien JP. (2006) the transformation of spinal curvature into spinal deformity: pathological processes and implications for treatment. Scoliosis 1: 3.
16. Jensen MP, Karoly P (1993) Self report scales and procedures for assessing pain in adults. In: Turk DC, Melzack R (eds) Handbook of pain assessment. New York: Guildford Press 15: 34.

Citation: Morningstar MW, Strauchman M, Fleischmann G (2015) Controlled-Release Curcumin for the Treatment of Pain Related to Adult Degenerative Scoliosis: A Retrospective, Open-Label, Case-Controlled Series. J Pain Relief 4: 192. doi:10.4172/21670846.1000192